

Brood Parasitism

Birds are well known for their parental care, patiently incubating their eggs and then bringing food to their young until they are old enough to look after themselves. However, certain birds, known as "brood parasites," lay their eggs in the nests of other birds and do not provide any parental care for their own offspring. Care that the "hosts" provide to the young parasites is care denied to their own young. This often has a detrimental effect on the reproductive success of the hosts and may affect their population numbers as well.

There are two types of brood parasitism, non-obligate and obligate. Non-obligate brood parasites lay eggs in the nest of conspecifics (i.e. same species) and in their own nests. Examples include several colonial nesting species such as Bank Swallows or African Weavers. Obligate brood parasites lay eggs in nests of other species and have completely lost the ability to construct nests and incubate eggs. Examples include Brown-headed Cowbirds and European Cuckoos. About 1% of all known bird species are obligate brood parasites. Other obligate brood parasites include: all African Honeyguides, about half of the species of cuckoos, the Black-headed Duck in South America, Shiny Cowbirds, Screaming Cowbirds, Bronzed Cowbirds, and Giant Cowbirds.

Cowbirds affect the breeding success of their hosts in two ways: female cowbirds remove host eggs from the nest, and nestling cowbirds compete with the host nestling. Cowbird nestlings are usually much larger and more aggressive than nestlings of host species. This allows baby cowbirds to out-compete host babies for food and nest space, many times the host baby is not able to survive. In many cases the host parents do not "notice" the difference between their own young and the young cowbird.

Brown-headed Cowbirds are one of the most well known examples of an obligate brood parasite. In fact, the genus name of cowbirds, *Molothrus*, means "intruder" in Latin. Much attention has been paid to the Brown-headed Cowbird because it tends to use Neotropical migrant species as hosts. Neotropical migrants are a group of birds that migrate between their breeding grounds in North America and their wintering grounds in Central and South America. Examples include warblers, tanagers, vireos, and thrushes. The populations of many of these birds have been declining and parasitism by cowbirds is partially to blame.

Parasitism by cowbirds is increasing and has been reported as high as 70% (i.e. 70% of nests found had cowbird eggs in them). The main reason for this increase is **habitat fragmentation**. Many cowbird hosts are considered to be "forest interior" birds (meaning they nest deep in the interior of a forest). Habitat fragmentation has reduced the amount of large contiguous forest tracts. Thus, reducing the distance that a female cowbird must travel to find nests of the forest interior species, making it easier to parasitize these nests.

Some very interesting relationships have developed between hosts and parasites. Many host species have developed powerful defense strategies against brood parasites and brood parasites have countered with some unique strategies of their own. Perhaps the best example of this relationship is between the parasitic Common Cuckoo and their hosts. Many hosts of the Common Cuckoos, such as the Great Reed Warbler, learned to recognize the parasitic eggs and would simply eject the foreign eggs from their nests. The cuckoos countered by evolving eggs that mimicked those of the host. In fact, this mimicry is so good that one ornithologist had to use genetic markers to tell the difference between host eggs and parasitic eggs. The picture below is an excellent illustration on just how good this mimicry has become.

Other brood parasites have developed interesting strategies to ensure that their nestling fledges the nest. For example, African Honeyguide nestlings are born with sharp hooks on the end of their bills. They use these hooks to kill the host nestling, thereby reducing competition for food and nest space. After they mature these hooks simply fall off. Eurasian Cuckoo chicks maneuver under host eggs and chicks and dump them over the edge of the nest. Their backs have a neatly designed depression that just fits their potential competitor.

Not to be outdone host species have developed many defense strategies of their own. They include shifting their breeding season so it does not correspond to that of the parasite; outright attack of the parasite; warning calls; nest concealment; egg discrimination; young discrimination; and removal of the parasitic egg or young. Hosts may employ one or several of these strategies. Brood parasitism is one of the most interesting phenomenon in the animal kingdom and demonstrates the amazing relationships animals can have with one another.

NAME _____
BLOCK _____

Brood Parasitism

The following questions are about the article "Brood Parasitism". Read the article & Answer the questions in complete sentences. This will be collected.

1. What are birds well known for?
 - 1.
 - 2.
 - 3.
2. What do Brood parasites do with their eggs?
3. What are the 2 types of brood parasitism?
 - 1.
 - 2.
4. What is a non-obligate brood parasite? Give an example of 1 bird that is one of these.

5. What is an obligate brood parasite? Example of one is the _____.

6. In what 2 ways does a cowbird affect the breeding success of its host bird?

1. _____

2. _____

7. What does the genus Molothrus mean in Latin?

8. What are neotropical migrants? Give 2 Examples of a neotropical migrant.

9. What is the main reason for increase in cowbird eggs in host's nests?

10. What did the Common Cuckoo mimic? What did the African Honeyguide develop to ensure babies were born?